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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/627,270
Filing Date: July 25, 2003
Appellant(s): ERLINGSSON ET AL.

Michael V. Messinger
Reg. No. 37,575
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/5/2009 appealing from the Office action mailed 12/9/2008.

(1) Real Party in Interest

The statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

To the best knowledge of the examiner, there are no other appeals or interferences which will directly affect or be directly affected or have a bearing on a decision by the Board of Patent Appeals and Interferences ("the Board") in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Following documents were relied upon in rejection of claims:

2003/0200439	Moskowitz	04-2002
6,330,672	Shur	06-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

9.1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.2. Claims 1 to 7, 10 to 17, 20 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moskowitz (US Patent Application Publication No. 2003/0200439, filed 4/14/2002), in view of Shur (US Patent No. 6,330,672, filed June 30, 1998).

9.2.1. As per claim 1, Moskowitz is directed to a method for providing secure transmissions across a network comprising a client device and a server (parag. 11, describing a transmission system that checks to see if transmitted packets are authentic, and therefore describing a secured transmission. Note that Moskowitz teaches a two way transmission system (see the section titled response to arguments

above), and therefore the transmission is both from client to server and vice versa), the method comprising: at the transmitting device, generating a stream of watermark bits (parag 30); generating a plurality of watermarks, each of the plurality of watermarks comprising an index number and a portion of the stream of watermark bits (parag 31, indicating an identifier (index) in each water mark, associating it with the watermark key); inserting the plurality of watermarks into each header of a plurality of outgoing packets (parag 30 to 43. Also see claim 1); receiving, at the server (the receiving device when IP packet transmission is from client to server), the plurality of outgoing packets (parag 44); and determining if a received packet is valid based on the watermark in the header of the received packet (parag 45-47. See also claim 2).

Moskowitz, however, does not explicitly teach the plurality of watermarks with respective index number to be inserted in the respective header of packets. Meaning, Moskowitz clearly teaches a watermark, with its index to be inserted in all headers of packets, but does not explicitly teach each header receiving a respective different watermark.

Shur teaches generation of a string of watermark bits (see Fig. 2A, and associated text), by item 130, where the string of watermark bits is injected to the data stream at different locations, based on the index associated with the hidden data (watermark stream), as indicated in col. 6 lines 38-52. The index is generated by item 120, which is driven by the transform coefficients associated with different parts of the data stream

(see col. 7 line 55 to col. 8 line 10 and col. 8 line 49 to col. 9 line 20). Therefore, Shur teaches putting different portions of the watermark string in different parts of the data, and defining an index, which identifies which part of the data stream is affected by the addition or injection of the watermark stream.

Moskowitz and Shur are analogous art, as they are both directed to watermarking techniques to identify piracy and data authentication. At the time of invention, it would have been obvious to the one skilled in art to combine the teachings of embedding a string of digital watermark bits into different packets of Moskowitz, and indexing the different portions such that the watermark associated with each packet would be detected by the decoder. Note that Shur teaches breaking data string into different time segments (packets), and associating a part of the watermark string with each segment (see Shur col. 7 line 62 to col. 9 line 9).

The motivation to do so would be to add watermarks to streaming data, such as audio or video signals, transferred in the packet switched networks, while not affecting the perception of the audio or video by the consumer, as stated in Shur col. 3 lines 10 to 38.

9.2.2. As per claim 2, Moskowitz in view of Shur is directed to the method of claim 1, wherein generating the stream of watermark bits includes generating a stream of watermark bits from an authorization and synchronization packet previously exchanged

between the client device and the server (Moskowitz paragraph 46 indicates that the WID is distributed from senders to the receivers prior to transmission of packets bearing the watermark, and according to paragraphs 31-32, the watermarks are generated based on the WID).

9.2.3. As per claim 3, Moskowitz in view of Shur is directed to the method of claim 1, further comprising activating a session by exchanging an authorization and synchronization packet between the client device and the server (Moskowitz paragraph 46 indicates that a secure session is created between senders and receivers to distribute the WID).

9.2.4. As per claim 4, Moskowitz in view of Shur is directed to the method of claim 1, further comprising: discarding the packet, if the watermark is not valid (Moskowitz parag. 45).

9.2.5. As per claim 5, Moskowitz in view of Shur is directed to the method of claim 1, wherein determining if a received packet is valid comprises: comparing the watermark of the received packet to a first and a second window, each of the windows comprising a set of expected watermarks; and accepting the watermark as valid if the received watermark matches one of the expected watermarks in the first or second windows (Moskowitz parag. 45 teaches comparing the watermarks to a table of WIDs to find the

appropriate WID. Therefore it teaches comparing the watermarks to several windows containing a set of potential matching watermarks)

9.2.6. As per claim 6, Moskowitz in view of Shur is directed to the method of claim 5, wherein the set of expected watermarks are generated from an authorization and synchronization packet previously exchanged between the client device and the server (Moskowitz parag 46).

9.2.7. As per claim 7, Moskowitz in view of Shur is directed to the method of claim 5, comprising: discarding the packet, if the watermark does not match one in the first or second windows (Moskowitz parag 45).

9.2.8. As per claim 10, Moskowitz in view of Shur is directed to the method of claim 1, wherein the stream of watermark bits is generated by a stream cipher (Moskowitz paragraph 30-32).

9.2.9. As per claim 11, Moskowitz in view of Shur is directed to the method of claim 1, wherein inserting at least one of the plurality of watermarks includes determining whether a valid session exists and inserting the at least one of the plurality of watermarks only if the valid session exists (Moskowitz paragraph 46 indicates that the WID is sent in a secure session prior to sending the packets).

9.2.10. Limitations of claims 12-17 and 20-25 are substantially similar to claims 1-7 and 10-11 above.

9.3. Claims 8, 9, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moskowitz in view of Shur, and further in view of Examiner Official Notice.

9.3.1. As per claim 8, Moskowitz in view of Shur is directed to the method of claim 5, wherein comparing the watermark further comprises:
maintaining at the server a record of a pivotal index number representing the index number of the highest-numbered valid watermark received from the client device; comparing the watermark of the received packet to a first and a second window, each of the windows comprising a set of expected watermarks and wherein the first window represents expected watermarks whose index numbers precede the pivotal index number and the second window represents expected watermarks whose index numbers immediately supersede the pivotal index number (Moskowitz teaches comparing the packet's watermark to the watermarks in a first and second window as described in response to claim 8 Moskowitz also teaches recording and using a pivotal index number of representing the index number of the highest-numbered valid watermark received from the transmitting device in paragraphs 32-42. Considering the first packet in the sequence of packets as representing the highest-numbered valid watermark received from the transmitting device, the other packets in the sequence will have their corresponding matching watermark sequentially in the WID. For example,

the matching watermark corresponding to the second packet is found in the WID at the location superseding the first matching watermark corresponding to the first received packet (pivotal packet). Examiner takes Official Notice that considering the last packet as the pivotal packet, the matching watermarks corresponding to the other packets in the stream of packets will be found sequentially at the preceding locations relative to matching watermark corresponding to the last packet of the stream. Therefore, it would have been obvious to a person skilled in art to use the above mentioned teachings of Moskowitz, and implement an indexing method based on sequential ordering of matching watermarks and a pivotal packet as required by the claim limitation).

9.3.2. As per claim 9, Moskowitz in view of Shur is directed to the method of claim 8, comprising: increasing the pivotal index number if a match is found in the second window and deleting the matching expected watermark from the second window (see response to claim 8, and note that when the router (Moskowitz paragraph 45) verifies the validity of a packet, it will sequentially move to the next packet and deletes the useless data (matching watermark for the packet already verified) as it is standard practice in computer systems to delete the useless data).

9.3.3. Limitations of claims 18 and 19 are substantially similar to claims 8 and 9 above.

(10) Response to Argument

Appellant's argument relative to claim rejections starts at section 3 of the Appeal Brief. Examiner's response relative to each subsection is outlined as follows:

10.1. Response to section titled: *(i) The Combination of Moskowitz and Shut does not Teach or Suggest Each and Every Feature of Claim 1*

With regards to the feature of a plurality of watermarks, appellant argues that neither one of the references teaches the claimed feature. The rejection relies on Shur to teach that feature, as also stated by the appellant. As indicated by the rejection and the following arguments, Shur teaches generating a stream of watermarks, and puts a different watermark in different segments of the signal. With regards to Shur's teaching of the feature, appellant argues:

> "In addition, the Examiner's allegation that different time segments in Shur receive different portions of the watermark does not change the fact that Shur generates only a single watermark, not a plurality of watermarks."

However, appellant's argument is not persuasive because first, a plurality of watermarks must be generated if different segments of signal are to receive different watermarks. Shur clearly shows that different segments of the signal receive different portions of the watermark at col. 8 lines 2 to 8, where it states:

> "*If the coefficients are below the thresholds, the coefficients potentially can be discarded without any loss in perceived quality. Yet, these coefficients represent*

candidate locations for placement of at least ***a portion of a digital watermark****. If above the thresholds, the coefficients are quantized and output as necessary data representative of the original analog signal 101.*"

If, as suggested by the appellant, the entire single watermark of Shur was to be used, why would Shur teach a portion of the digital watermark, rather than the watermark? Why should Shur put the same single watermark in different locations identified by the indices? It is noteworthy that Shur clearly wants the watermark to be unnoticed and imperceptible (see above cited portion of Shur, or the abstract). Putting the whole watermark in one place in the signal makes it more perceptible, because the longer the sequence of bits (entire watermark) the more it affects the signal, and the more it is perceptible. By breaking the watermark in portions and spreading the portions in different locations in the signal, each portion of a signal gets a smaller effect from adding the watermark and therefore, the watermark would be less perceptible. Therefore, Shur clearly teaches putting different portions of the watermark in different locations in the signal.

Second, even if it is assumed that the plurality of watermarks is generated from a single watermark stream, there is still a plurality of watermarks. The claim does not have a limitation that the plurality of watermarks must not be generated from an original single stream of watermarks.

It is also interesting to note that the claim also requires generating the plurality of watermarks from portions of **a** stream of watermarks (see appellant's claim 1). Therefore, there is clearly no conflict in generating a plurality of watermarks from a single bit stream of watermarks.

Appellant further argues that the combination does not teach the feature of "each of the plurality of watermarks comprising a respective index number". Specifically appellant argues:

> "First, Appellants wish to point out that Shur makes no mention at all of "indices" or an "index" as alleged by the Examiner. Rather, Shur describes "indexed locations." Further, it is clear that it is these "indexed locations" that the Examiner now refers to as "indices." See Office Action, page 7, lines 4-12."

However, Shur does mention "index" in its disclosure. As an example, see Figure 1B, where item 120 is labeled as index selector, and col. 8 line 50 to col. 9 line 20. It clearly shows that the watermark location is an index. It further shows that the index is selected. Therefore, there must be a plurality of indices to select from.

It is also noteworthy that there must be an index to have indexed locations. Therefore, even if as admitted by the appellant, Shur teaches "indexed locations", it must also teach a plurality of indices.

Appellant further argues:

> "In addition, Appellants assert that (1) an "indexed location" of Shur is not equivalent to "a respective index number" as recited in claim 1; and (2) even assuming, arguendo, that an "indexed location" of Shur can be equivalent to a "respective index number," the "indexed location" of Shur is not a part of the watermark, as recited in claim 1."

However, it is Moskowitz that shows an index number and the index number being part of the watermark (see the final rejection section 7.1, or the copy of the rejection in the above section 9.2.1). Shur is used to explicitly show a plurality of indices, and not just one index. Therefore, the feature of the index being part of watermark is suggested by the cited combination, as it is suggested by Moskowitz.

It is noteworthy that the appellant has not cited any convincing reason that Shur's indices cannot be considered an index number.

Appellant further argues that the combination of Moskowitz and Shur is technically infeasible. Appellant argues:

> "First, assume for the sake of argument that Shur's watermarking method can be used on the payload of a packet of Moskowitz. The result of such watermarking would be a payload with a watermark **inserted** at different locations **in the payload**."

However, the rejection uses Moskowitz as the primary reference. As shown in the rejection, Moskowitz puts the watermarks, which comprise the index into the packet header and not the payload (see Moskowitz paragraph 30, clearly stating that the watermark is inserted in the packet header). Therefore, the index, being part of the watermark, is inserted in the header, and not the payload. In combining Shur with Moskowitz, the index is also a function of the data, and therefore, there is a plurality of indices. The location where the indices are inserted is not changed. The indices, being part of the watermark are inserted in the header.

Appellant further argues:

> "Indeed, referring to FIG. 1B of Shur, it is clear that once the watermark is injected into the information signal by coefficient quantizer 106, the watermark or portions thereof no longer exist in discrete form so that they can be inserted into packet headers. Rather, as described by Shur, the watermark is distributed throughout the output bitstream of quantizer 106 such that it is "not easily recognizable and locatable." See Shur, column 10, lines 54-62."

However, the combination relies on Shur for generating a plurality of indices, which vary depending on the information signal. The way the watermark is injected does not have to be identical to the way Shur injects the watermarks. As described above, the watermarks are put in the header of the packets, as suggested by Moskowitz. Unless the appellant can show that such combination would fail, the combination is proper. As

discussed in the following, appellant's argument that the combination of Moskowitz and Shur renders Moskowitz unsatisfactory for its intended purpose is non-persuasive.

10.2. Response to section titled: *(ii) The Combination of Moskowitz and Shur Renders Moskowitz Unsatisfactory for Its Intended Purpose*

At this point appellant challenges the validity of the combination of Moskowitz and Shur. Before addressing appellant's specific arguments, Examiner explains how the two references are combined to arrive at the invention. The similar explanation is reflected in the Final Office action.

Moskowitz teaches all the elements of the claimed invention, such as a watermark inserted in the packet header of an information signal, the watermark comprising an index number and a portion of the stream of watermark bits, receiving and verifying the validity of the packets based on the watermark, except for showing a plurality of watermarks instead of one watermark (see rejection of claim 1 above). To show that it would be obvious to put portions of the watermark in different portions of the signal (such as in one packet which carries a portion of the signal), and have indices associated with the portions, thereby have a plurality of watermarks generated, the Examiner uses teachings of Shur. As indicated above, Shur teaches that different portions (segments) of information signal receive different portions of the watermark. Shur also teaches an index which identifies each watermark in association with the

portion of the information segment. Now, Shur has additional details on how the locations are selected such that the affect of adding the watermark is least perceivable, or how the watermark is injected in the information signal. However, those additional details make no conflict with generation of a plurality watermarks, each comprising portions of a watermark, and generation of an index in association with the different watermarks as taught by Shur. Therefore, there would be no conflict if the watermark of the system of Moskowitz is improved using the teachings of Shur, thereby having a plurality of watermarks including their associated indices.

The following addresses appellant's specific arguments:

Appellant argues:

> "For these purposes, Moskowitz expressly discloses that **the same watermark should be used in each and every packet of the packet flow.** See e.g., Moskowitz, paragraph [0030], lines 7-9; see also Moskowitz, paragraph [0034], lines 5-7; paragraph [0035]."

However, appellant has deleted the important word "32-bit" from Moskowitz paragraph [0030] cited above, and converted the word "may be" to "should". The exact wording of Moskowitz paragraph [0030] is as follows:

> *"[0030] In one embodiment of the present invention, the packet watermark may be used to classify a stream of data for a particular QoS. In particular, the*

stream of data may be organized into a plurality of packets, and the sender may add a watermark to the header of each packet comprising the stream. The size of the watermark may vary, but for illustration, a 32-bit watermark is used. Preferably, the same 32-bit watermark may be placed in each and every packet in the flow. In a particular case of TCP/IPv4, the 32-bit watermark may be stored in the Stream ID option field (i.e., in the header) in the IPv4 packets. To indicate a QoS level for the flow, a portion of the watermark may be reserved for a QoS level identifier. For example, in the example of a 32-bit watermark, the 4 MSB's ("most significant bits") of the watermark could be used to identify the QoS level, yielding 16 available levels, and the remaining 28 bits of the watermark could be used to uniquely identify the flow."

First, in the above paragraph, Moskowitz is clearly talking about the format of the watermark, not its content. Meaning, Moskowitz suggests using the same size, namely 32-bit watermarks. There is no requirement or even suggestion that the content of the 32 bits must be the same.

Second, as it is clear from the beginning of the paragraph, Moskowitz is describing one embodiment of his invention, and not limiting the invention, or requiring that the same structure must be used. Third, even in suggested embodiment and format, there is no clear requirement, as Moskowitz says “preferably”, and “may be” as opposed to “must” or even “should”.

None of the other portions cited by the appellant include any wording that shows any explicit conflict with having different watermarks.

Appellant also argues that if either the QoS or the WID portion of Moskowitz watermark was to be modified for each packet, the packets of the same stream would have different QoS and therefore would receive different treatments, or the packets cannot be identified to belong to the same stream, and that would be against the purpose of Moskowitz invention.

However, there are two major flaws with appellant's argument. First, there is no requirement in the claim that each and every packet receives different portion of the watermark. The claim merely requires inserting watermarks into respective headers of the outgoing packets. Therefore, packets of the stream1 can all take the same watermark1, and packets of another stream2 can take watermark2, where watermark1 and watermark2 are different.

Second, even if each packet was to receive a different watermark, there would be no conflict. Note that for two watermarks to be different, there is no need that every section or bit of the watermark be different. Each watermark can comprise multiple sections (e.g. group of bits). As long as one of the sections is different than the other section, the watermarks are different (note that this is readily taught by Moskowitz by proposing a

QoS section and a WID section). Yet, some other section of the watermark (representing the stream) could be the same for all packets of the same stream. Therefore, a Moskowitz watermark, in combination with Shur's teachings, could comprise of a QoS section and a WID section, and a portion that is different from one packet to another. The one skilled in art would be familiar with parsing data to access different portions, each having different meanings, and would be able to recognize different parts and their associated significance.

Accordingly, combination of Moskowitz and Shur creates no conflict, and does not render Moskowitz unsatisfactory for its intended purpose.

10.3. Response to section titled: *B. Claims 8, 9, 18, and 19 are patentable over Moskowitz, Shur, and Examiner Official Notice*

With respect to claim 8, appellant argues:

> "In particular, Moskowitz makes no mention or suggestion of "comparing the watermark.., to a first and a second window, each of the windows comprising a set of expected watermarks," or "maintaining . . . a record of a pivotal index number representing the index number of the highest-numbered valid watermark received," as recited in claim 8."

However, the rejection of claim 5, as cited in rejection of claim 8, shows comparing the watermark of the received packet to a first and a second window, each of the windows

comprising a set of expected watermarks. This is because Moskowitz parag. 45 teach comparing the watermarks to a table of WIDs to find the appropriate WID. Therefore it teaches comparing the watermarks to several windows containing a set of potential matching watermarks.

With regards to "maintaining . . . a record of a pivotal index number representing the index number of the highest-numbered valid watermark received," Examiner has cited paragraphs 32-42 of Moskowitz. The cited portion clearly describes generation of a hash function from the entire flow of the signal that is to be transmitted via TCP/IPv4 packets. This hash would be part of the WID, which is part of the watermark, and is used to verify if the flow is authentic. Accordingly, the receiving side must follow the same procedure to obtain the same hash, such that it can be compared with the received WID and verify the flow. Therefore, the receiver must keep track of all watermarks received, and extract the WID to compare. This requires keeping track of the highest numbered valid watermark received, which according to claim is named the pivotal index number. Note that paragraph [0032] indicates that the array (hash) is the set of all the hash outputs generated using successively portions of the flow until the complete flow has been processed. This clearly shows that in the receiving side, the entire flow has to be processed as well, therefore, requiring a record of all watermarks received. Therefore, Moskowitz does teach said features.

Appellant further challenges Examiner's Official Notice. Before, discussing appellant's challenge, it is noteworthy that the Official Notice was taken on the non-Final rejection dated 5/12/2008. Appellant's argument relative to said Non-Final action was completely silent relative to the Official Notice.

With respect to the Official Notice, appellant argues:

> "In the Office Action, the Examiner merely stated the Official Notice but provided no basis at all for the Official Notice. Thus, Appellants were not allowed the opportunity to challenge the Official Notice because the Examiner provided no line of reasoning in support of the Official Notice which Appellants could challenge."

However, the rejection clearly states the basis for the Official Notice. The basis of the Official Notice, as shown in the rejection, is that considering the first packet in the sequence of packets as representing the highest-numbered valid watermark received from the transmitting device, the other packets in the sequence will have their corresponding matching watermark sequentially in the WID. For example, the matching watermark corresponding to the second packet is found in the WID at the location superseding the first matching watermark corresponding to the first received packet (pivotal packet) (see rejection of claim 8 above).

Appellant fails to discuss the Official Notice or its basis, or why the the facts stated are not common knowledge, or why the technical line of reasoning is unclear. According to MPEP section 2144.03, subsection C:

> "*C. If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding With Adequate Evidence.*
> *To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b). See also Chevenard, 139 F.2d at 713, 60 USPQ at 241 ("[I]n the absence of any demand by appellant for the examiner to produce authority for his statement, we will not consider this contention."). A general allegation that the claims define a patentable invention without any reference to the examiner's assertion of official notice would be inadequate*."

Appellant's argument is nothing more than a general allegation, and therefore is considered inadequate.

Based on the discussion above, appellant's arguments are not persuasive, and the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/Farid Homayounmehr/
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Examiner, GAU 2439

August 14, 2009

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